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# Norepinephrine Involvement in the Intermittent Swim Stress-Induced Deficit in Spatial Learning and Memory

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Learning and memory impairments are often caused by stress disorders including depression. The present study investigated the involvement of norepinephrine in the swim stress-induced deficits of spatial learning and memory. Exposure to intermittent swim stress (ISS) followed by learning and memory tests in the Morris water maze (MWM) were used to investigate this relationship. The ISS paradigm consists of intermittent exposure to cold water, producing stress responses in rats. Reboxetine, a norepinephrine selective reuptake inhibitor (NSRI), was employed to investigate whether this compound reverses the ISS-induced deficit. In other words, rats exposed to the ISS, were hypothesized to experience impaired learning and subsequent deficits in memory while rats treated with reboxetine that are also exposed to stress will not experience these deficits. In order to provide further evidence that reboxetine reverses the affect of the ISS on spatial learning and memory, a 24-hour post-stress assessment in the MWM in one single massed session of 18 trials (9 blocks of 2 trials each) on the day following the ISS was performed. This provided verification that ISS-induced deficits in spatial learning and memory are sensitive to the effects of reboxetine thereby implicating that norepinephrine is a crucial contributor to this phenomenon. It was hypothesized that if norepinephrine is involved in depressive behaviors caused by stress, then reboxetine will attenuate any deficits produced by the ISS paradigm in the learning and memory trials performed in the MWM.